

GEOLOGY OF BEREGHINYA PLANITIA QUADRANGLE (V-8), VENUS

George E. McGill

Department of Geosciences, University of Massachusetts, Amherst

The Bereghinya Planitia quadrangle (V-8) lies between 25° and 50° N., 0° and 30° E. Bereghinya Planitia lies north of Eistla Regio, and the Bereghinya Planitia quadrangle is immediately north of the Sappho Patera quadrangle (V-20), which has already been mapped (McGill, 2000, USGS map I-2637). Work is in progress on a first draft map of V-8, which is being prepared digitally using Adobe Illustrator.

As is expected, many of the plains and volcanic units present in V-20 continue northward into V-8. At least two of the three members of regional plains materials that were mapped in V-20 also can be delineated in V-8. In addition, scattered exposures of a reticulated plains unit in V-8 were not present in V-20. Some of these occurrences of reticulated plains are associated with clusters of small volcanic constructs (“shield fields”), and thus it is possible that at least some of the reticulated plains material consists of flows derived from these small constructs. Although not yet certain, the final map may have two reticulated plains units, one associated with small constructs, one not. Also, numerous shield fields are not associated with reticulated plains. Bereghinya Planitia includes an interesting suite of coronae and corona-like features, including the “trilobite-shaped” Beyla Corona. Most of these coronae appear to be associated with belts of closely spaced ridges and fractures, and thus this quadrangle is an excellent place to

attempt an understanding of the genetic relation between deformation belts and coronae. Scattered within the plains are numerous inliers of tessera material, most of which are deeply embayed by regional plains materials. Also present are small patches of a “bright plains” material that generally is characterized by a single set of closely spaced lineations (as opposed to tessera material, which generally exhibits at least two sets of lineations). The term “bright plains” is being used rather than “lineated plains” because the lineations are most likely superposed younger structural features and, furthermore, there are places within these bright plains where the lineations are absent. One of the major mapping problems is to consistently separate (1) ordinary (member “b”) regional plains that have been cut by abundant younger structures from (2) slightly older and brighter member “a” regional plains from (3) bright plains. The criteria being used involve the necessity of a brightness or texture contact in addition to any change in the density of superposed structures. Problems arise when a brightness contact fades away along trend!

The quadrangle also has an unusually large number of dark-centered bright patches apparently caused by bolides that disintegrated in the atmosphere before reaching the surface. At least three impact craters possess parabolic haloes that are characterized by alternating dark and light streaks, suggesting significant modification by wind.